How to configure TCP/IP settings in Windows

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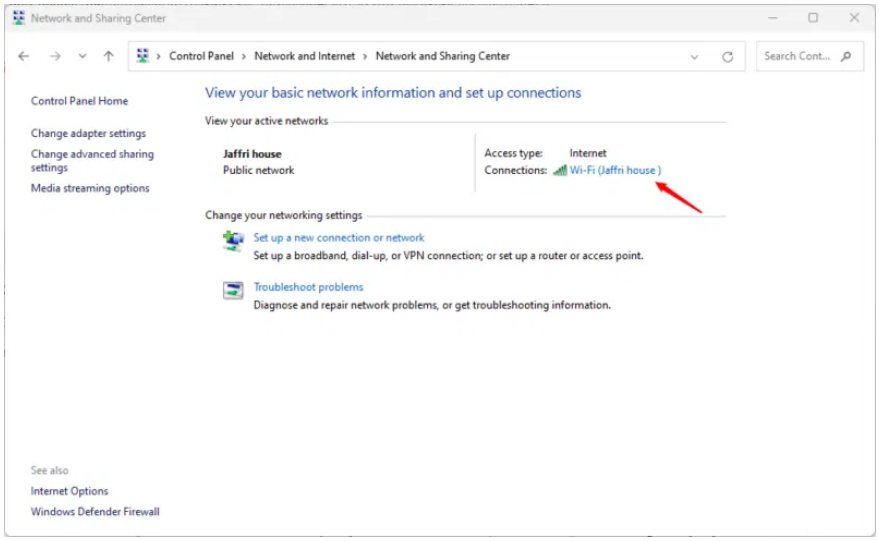
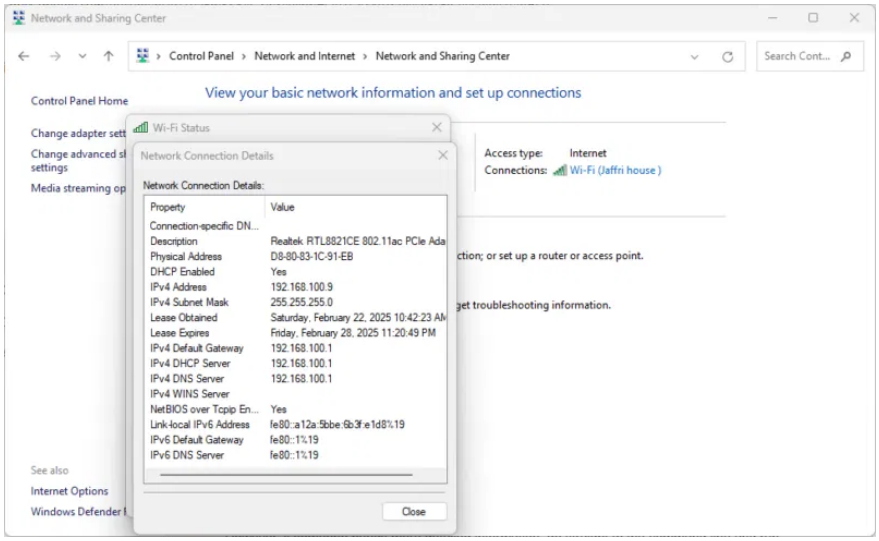
Your computer needs a way to communicate with other devices, and that's where TCP/IP comes in. TCP/IP ensures that data moves smoothly across a network, whether you're browsing the web or sharing files. This guide will explore how to configure TCP/IP settings in Windows, as well as how to troubleshoot common TCP/IP problems.

1. Check current TCP/IP settings

Before configuring TCP/IP settings in Windows, you should check their current settings. The easiest way is through the Network and Internet settings panel, where you can see all the details in a clear, visual format. Go to **Network & Internet -> Network and Sharing Center** . Select **"Wi-Fi"** if you are connected wirelessly or **"Ethernet"** if you are using a wired connection.



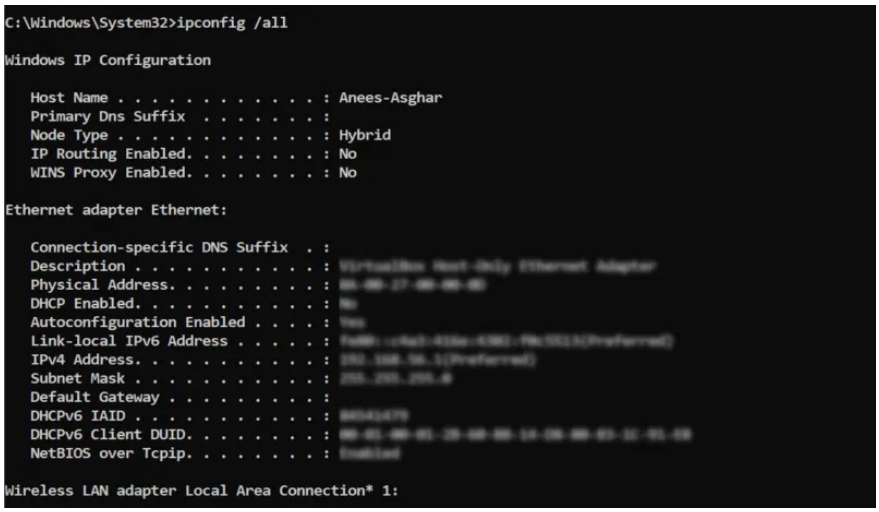
Click your Internet connection to view IP settings, then click **Details** to view network connection details.



However, if you need more detailed information, go straight to the command line and run:

```
ipconfig /all
```

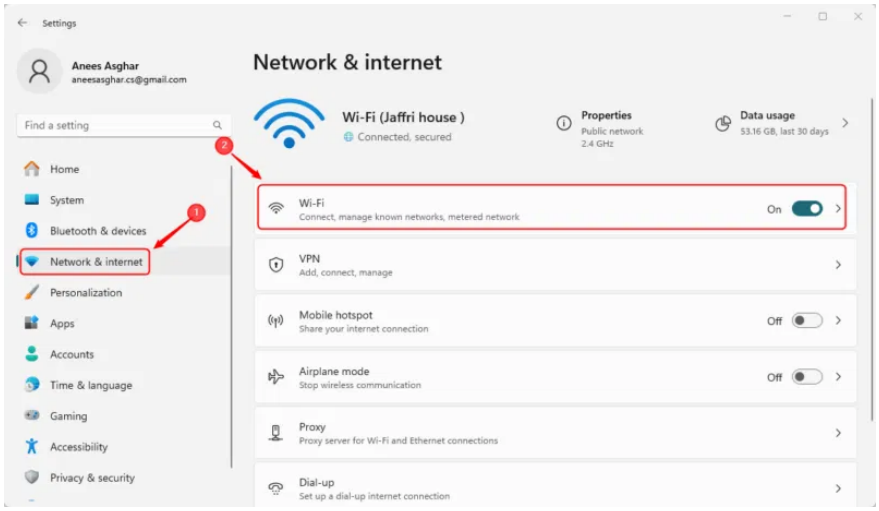
This command returns the IP address , subnet mask, default gateway and more details in just a few seconds.



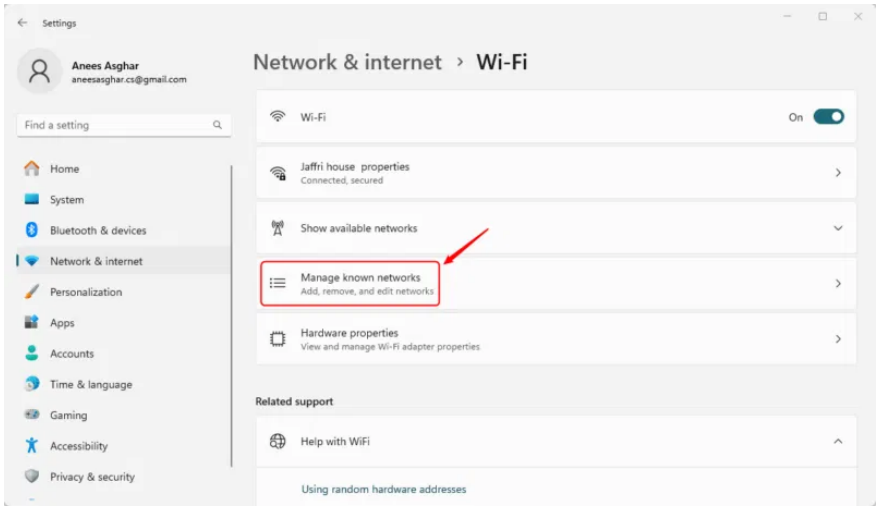
2. Configure TCP/IP settings using Control Panel

TCP/IP settings can be configured dynamically or statically. Dynamic configuration uses DHCP to automatically assign IP addresses, making network management easier. Static configuration requires manual setup of IP addresses, subnet masks, gateways, and DNS servers.

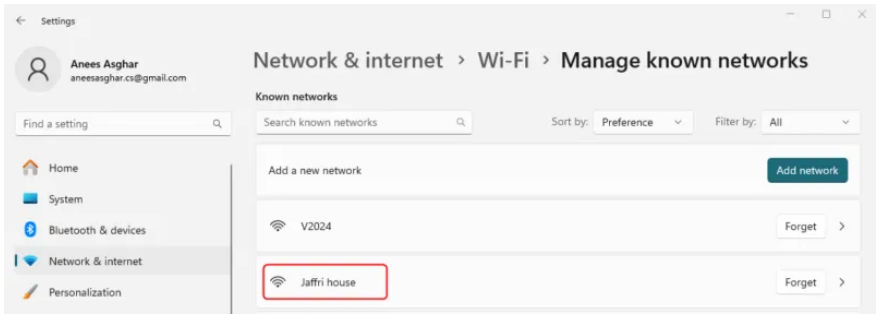
To configure TCP/IP settings, open **Network and internet** , and then select a network type.



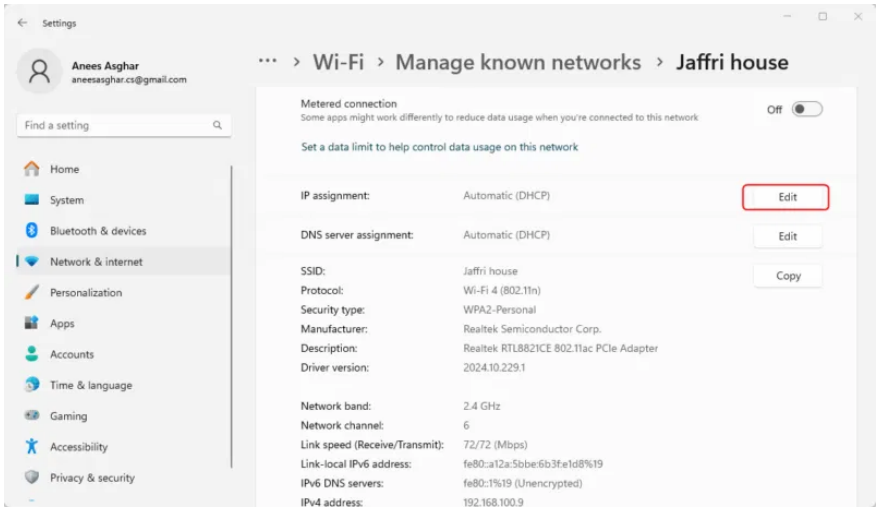
Navigate to **Manage Known Networks** .



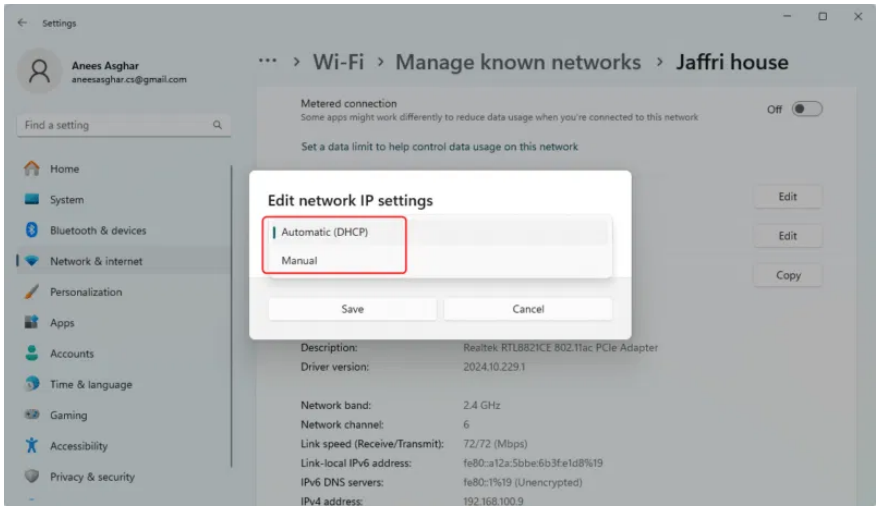
Select a network.



Click **Edit** next to **IP assignment** to edit the network IP settings.

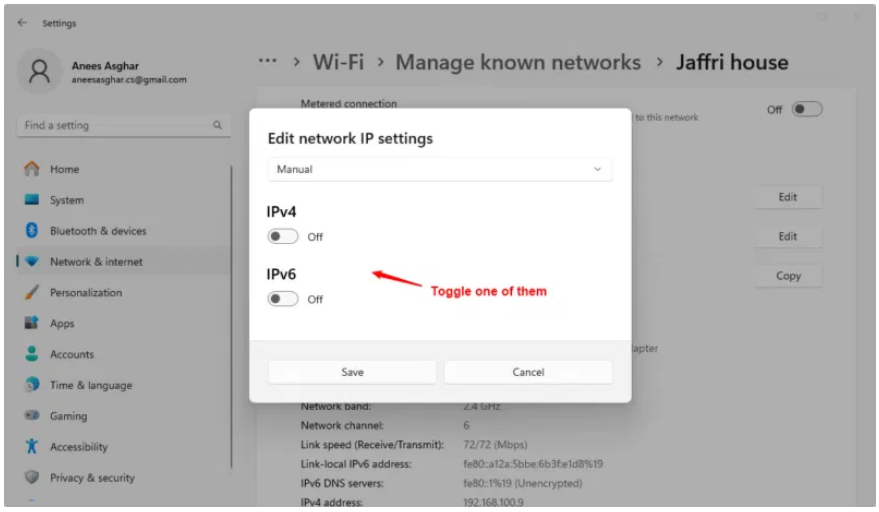


Select **Automatic (DHCP)** or **Manual** in the IP assignment settings, and then click to configure the automatic or manual settings.

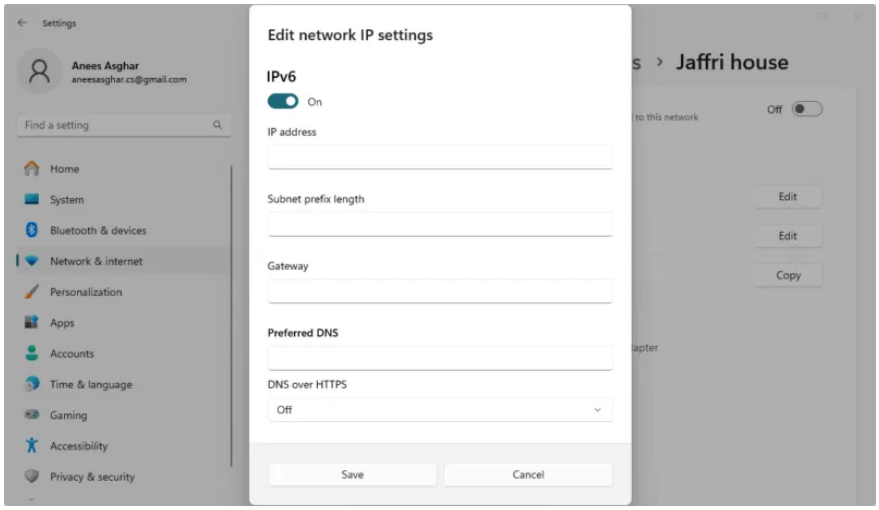


If you select **Automatic (DHCP)** , Windows will automatically assign the IP address and other network details from the DHCP server. However, if you select **Manual** , you will need to enter the IP address, subnet mask, gateway, and DNS settings yourself.

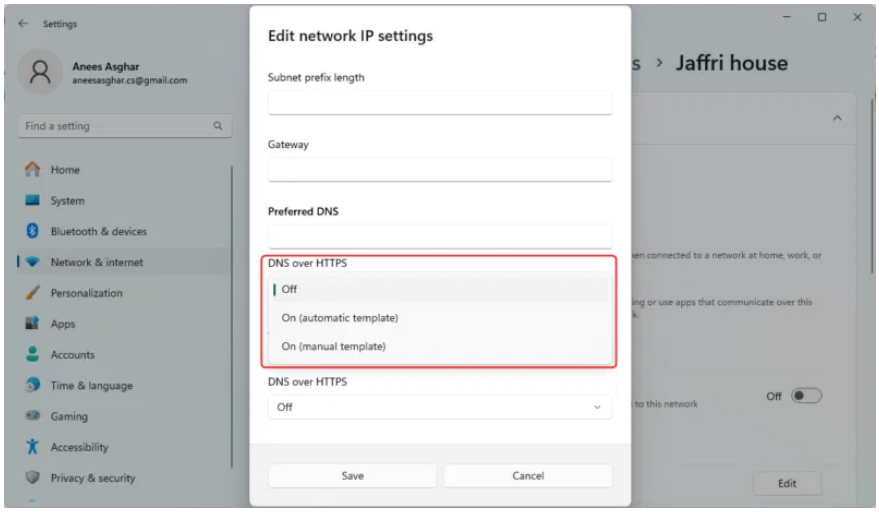
First, enable IPv4 or IPv6, based on your requirements:



Provide details like IP address, subnet prefix length, gateway, preferred DNS and alternate DNS in the respective fields.



You can also enable DNS over HTTPS (DoH) for secure DNS requests and choose between automatic or manual.



When using DNS over HTTPS (DoH), you can choose to enable or disable Fallback to plaintext. If enabled, DNS requests will be sent unencrypted when HTTPS is not available. If disabled, DNS requests will not be sent if HTTPS is not available, ensuring that no unencrypted queries are transmitted.

Finally, save the changes.

3. Configure TCP/IP settings using CMD

Command Prompt (CMD) provides a powerful way to configure TCP/IP settings without relying on a graphical interface, giving you complete control over your network configuration. You can use the netsh command to set a static IP, enable DHCP, or adjust DNS settings.

To set a static IP address using the command line, open Command Prompt or PowerShell with admin rights and type:

```
netsh interface ip set address "" static netsh interface ip set dns "" static
```

Replace with the name of your network adapter (e.g. "Ethernet" or "Wi-Fi"), with the desired static IP, with the correct subnet mask, with your default gateway, and with your preferred DNS server.

To configure dynamic TCP/IP settings, enter:

```
netsh interface ip set address "" dhcp netsh interface ip set dns "" dhcp
```

Replace with the network adapter name (e.g. 'Ethernet' or 'Wi-Fi'). This will enable DHCP for both the IP address and DNS settings, allowing the system to obtain them automatically.

4. Troubleshooting common TCP/IP problems

If you're having network problems, troubleshooting your TCP/IP settings can help restore connectivity. You can use tools like ipconfig and netsh to diagnose and troubleshoot problems effectively.

Start by checking the configuration with **ipconfig /all** to verify the IP settings. If the connection is unstable, reset the TCP/IP stack with the command:

```
netsh int ip reset
```

The output confirms that the netsh int ip reset command successfully resets various network components, including TCP/IP settings, network interfaces, IP addresses, routing, and neighbor caches.

```
C:\Windows\System32>netsh int ip reset
Resetting Compartment Forwarding, OK!
Resetting Compartment, OK!
Resetting Control Protocol, OK!
Resetting Echo Sequence Request, OK!
Resetting Global, OK!
Resetting Interface, OK!
Resetting Anycast Address, OK!
Resetting Multicast Address, OK!
Resetting Unicast Address, OK!
Resetting Neighbor, OK!
Resetting Path, OK!
Resetting Potential, OK!
Resetting Prefix Policy, OK!
Resetting Proxy Neighbor, OK!
Resetting Route, OK!
Resetting Site Prefix, OK!
Resetting Subinterface, OK!
Resetting Wakeup Pattern, OK!
```

For DHCP related issues, release and renew the IP address using the commands:

```
ipconfig /release ipconfig /renew
```

If DNS problems arise, clear the cache with the command:

```
ipconfig /flushdns
```

```
C:\Windows\system32>ipconfig /flushdns

Windows IP Configuration

Successfully flushed the DNS Resolver Cache.
```

For persistent issues, consider manually reconfiguring IP settings or updating network drivers.

Whether you're using DHCP for automatic setup or static IP for more control, you have the tools to easily manage your network and configure your TCP/IP settings.

In some cases, resetting network settings may be necessary to resolve persistent connectivity issues. This restores the default configuration, clears corrupted settings, and reinitializes the network adapter. However, this process also erases saved Wi-Fi networks, paired Bluetooth devices, VPN settings, and custom network profiles, requiring you to set them up again manually.

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